IN THE CLAIMS

Claims 1-45 have been canceled.

Claims 53-54 are cancelled

Claims 46-52 and 55-64 are in this application.

Claims 46-52 and claim 62 are amended.

Claims 63 and 64 are new.

1-45 (Canceled).

46. (Currently Amended) A ~~liquid~~ cooling system comprising:

an electron conducting material having length and width dimensions larger than the depth dimension and ~~a heat transfer unit~~ operating under the peltier effect, the electron conducting material ~~heat transfer unit~~ including a cold region and a hot region, wherein the cold region is thermally coupled to one or more heat generating components and absorbs heat from the heat generating components for transfer to the hot region;

a conduit coupled to the hot region and removing ~~dissipating~~ heat by transporting a coolant therethrough ~~cooled liquid~~, the coolant ~~cooled liquid~~ transforming into heated coolant ~~liquid~~ in response to receiving the heat from the hot region; ~~and~~

a heat exchange unit coupled to the conduit and receiving the heated coolant ~~liquid~~, the heat exchange unit generating ~~the~~ cooled coolant for transfer to the conduit ~~liquid~~ in response to receiving the heated coolant ~~liquid.~~; and

wherein the electron conducting material is disposed such that heat transfer from the cold region to the hot region is along the length or width dimension of the electron conducting material.

47. (Currently amended) A ~~liquid~~ cooling system as set forth in claim 46~~, wherein the heat transfer unit comprises~~ having a first electron conducting material operating under the peltier effect and including a first hot region and a first cold region, and having a second electron

conducting material operating under the peltier effect and including a second hot region and a second cold region, wherein the first hot region and the second hot region form the hot region and the first cold region and the second cold region form the cold region.

48. (Currently amended) A ~~liquid~~ cooling system as set forth in claim 47, wherein the first electron conducting material and the second electron conducting material are coupled at a junction.

49. (Currently amended) A ~~liquid~~ cooling system as set forth in claim 48, wherein the first electron conducting material and the second electron conducting material form a junction for ~~mating with the processor~~ thermal coupling to one or more heat generating components.

50. (Currently amended) The cooling system of claim 47 wherein the first cold region and the second cold region are disposed in close proximity to each other and ~~both~~ are thermally coupled to one or more heat-generating components and wherein the first hot region and the second hot region are both thermally coupled to the conduit, the cold regions absorbing heat from the heat-generating components and transferring such heat to the hot regions.

51. (Currently amended) The cooling system of claim 47 wherein the first hot region and the second hot region are disposed in close proximity to each other and ~~both~~ are thermally coupled to the conduit and wherein the first cold region and the second cold region are ~~both~~ thermally coupled to one or more heat-generating components, the cold regions absorbing heat from the heat generating components and transferring such heat to the hot regions.

52. (Currently amended) The cooling system of claim 46 wherein the conduit is disposed such that heated coolant from the transfer of heat from the hot region to the coolant is directed upward for enhancing convective flow of the coolant. ~~heat transfer unit further comprises:~~

~~an inlet coupled to the conduit for receiving the cooled liquid from the heat exchange unit;~~

~~an outlet coupled to the conduit for receiving heated liquid from the conduit and directing the heated liquid to the heat exchange unit; and~~

~~wherein the inlet is disposed below the outlet for enhancing convective flow of the liquid.~~

53-54 are canceled.

55. (Previously submitted) The cooling system of claim 46 wherein the cold region and the hot region are part of an electron conducting material coupled to a power source.

56. (Previously submitted) The cooling system of claim 55 wherein the electron conducting material is embedded in the substrate of a semiconductor material.

57. (Previously submitted) The cooling system of claim 55 wherein the electron conducting material is a solid state, peltier-effect device.

58. (Previously submitted) An electronic system having the cooling system as set forth in claim 46.

59. (Previously submitted) A mobile electronic system having the liquid cooling system as set forth in claim 46.

60. (Previously submitted) A portable electronic system having the liquid cooling system as set forth in claim 46.

61. (Previously submitted) A system with optical devices having the liquid cooling system as set forth in claim 46.

62. (Currently amended) A method for cooling heat generating components ~~in an electronic system~~ having ~~a heat transfer unit~~ an electron conducting material with length and width

dimensions larger than the depth dimension and operating under the peltier effect, the ~~heat transfer unit~~ electron conducting material including a cold region and a hot region, wherein the cold region is thermally coupled to one or more heat-generating components and absorbs heat from the heat generating components for transfer to the hot region and having a conduit for transporting ~~liquid~~ coolant coupled to the hot region and coupled to a heat exchange unit; the method comprising the steps of:

transferring heat from the heat-generating components to the cold region;

transferring heat from the cold region to the hot region along the length or width dimension of the electron conducting material;

absorbing heat from the hot region into the coolant ~~liquid~~ in the conduit thereby heating the coolant ~~liquid~~;

transporting the heated coolant ~~liquid~~ to the heat exchange unit;

cooling the heated coolant ~~liquid~~ in the heat exchange liquid by dissipating heat from the coolant ~~liquid~~ ; and

transporting the cooled coolant ~~liquid~~ from the heat exchange unit to the conduit coupled to the hot region.

63. (New) The cooling system as set forth in claim 46 wherein a heat transfer unit is comprised of the electron conducting material coupled to the conduit, the heat transfer unit having no additonal housings thermally coupled to the heat generating components for the transfer of heat within the housing to a coolant flowing through such housing.

64. (New) The cooling system as set forth in claim 46 wherein the electron conducting material, the conduit and the heat exchange unit comprise the cooling system, the cooling system having no additonal housings thermally coupled to the heat generating components for the transfer of heat within the housing to a coolant flowing through such housing.